

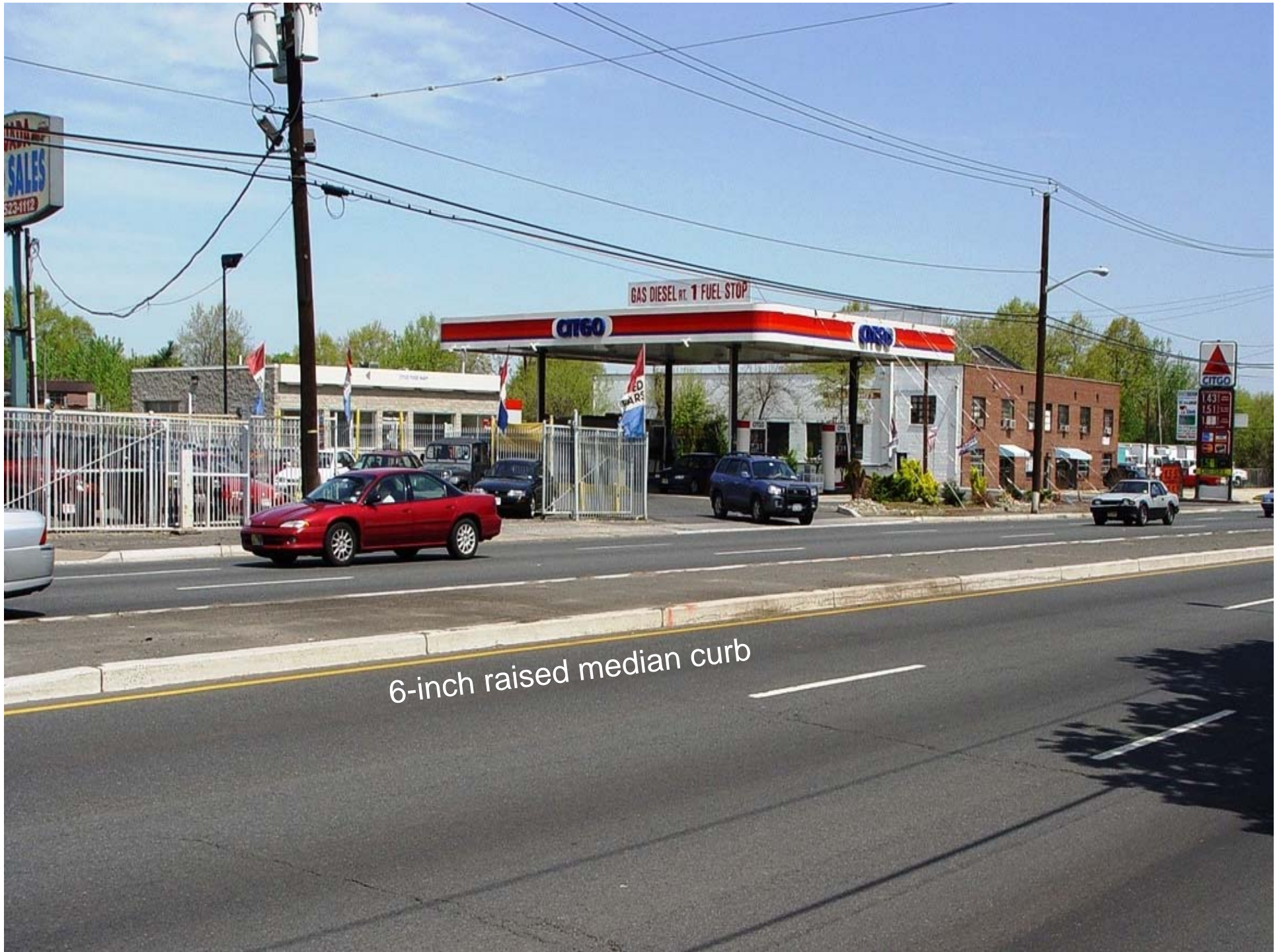


NTSB National Transportation Safety Board

Office of Highway Safety

Linden, New Jersey

May 1, 2003



6-inch raised median curb





Parties to the Investigation

- Federal Highway Administration
- New Jersey Department of Transportation
- City of Linden, New Jersey, Police Department
- No public hearing, depositions, or party submissions

Major Issues Identified

- Alcohol impairment
- Speed enforcement
- Criteria for the use of median barriers on high-volume, high-speed roadways

Proposed Recommendations

- Federal Highway Administration
- American Association of State Highway and Transportation Officials
- City of Linden, New Jersey
- Reiterated safety recommendation to State of New Jersey



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Human Performance

Overview

- Driver experience and health
- Driver activities
- Toxicology
- Fatigue and alcohol

Experience/Health

- Properly licensed
- No current or pending license suspensions
- No record of recent accidents or moving violations
- Described as being in “good health”

Driver Activities

- Driver had “nontraditional” schedule
- Did not work the 2 days before the accident
- Active in the 12 hours prior to crash
 - Stopped at a bar
 - Played softball
 - Returned to the bar
 - Spoke with a friend

Toxicology

- Negative for illicit drugs
- Testing found alcohol
 - 0.326% in blood (BAC)
 - 0.379% in urine
 - 0.210% in vitreous humor
- Levels indicate significant alcohol consumption

Alcohol and Driving

- Impairment seen at 0.02%
- Driving-related behaviors impaired at 0.08%
- Higher BAC levels result in greater impairment
- Functioning at this level suggests alcohol tolerance

Tolerance

- Not immunity
- Learned through practice
- Problem lies in unexpected events
- Driver steering response consistent with negated tolerance

Operator Fatigue and Alcohol

- Alcohol and sleep interact
- Driver's sleep night before accident unknown
- Combined effect of alcohol consumption and low-quality sleep impaired performance



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HIGHWAY ISSUES

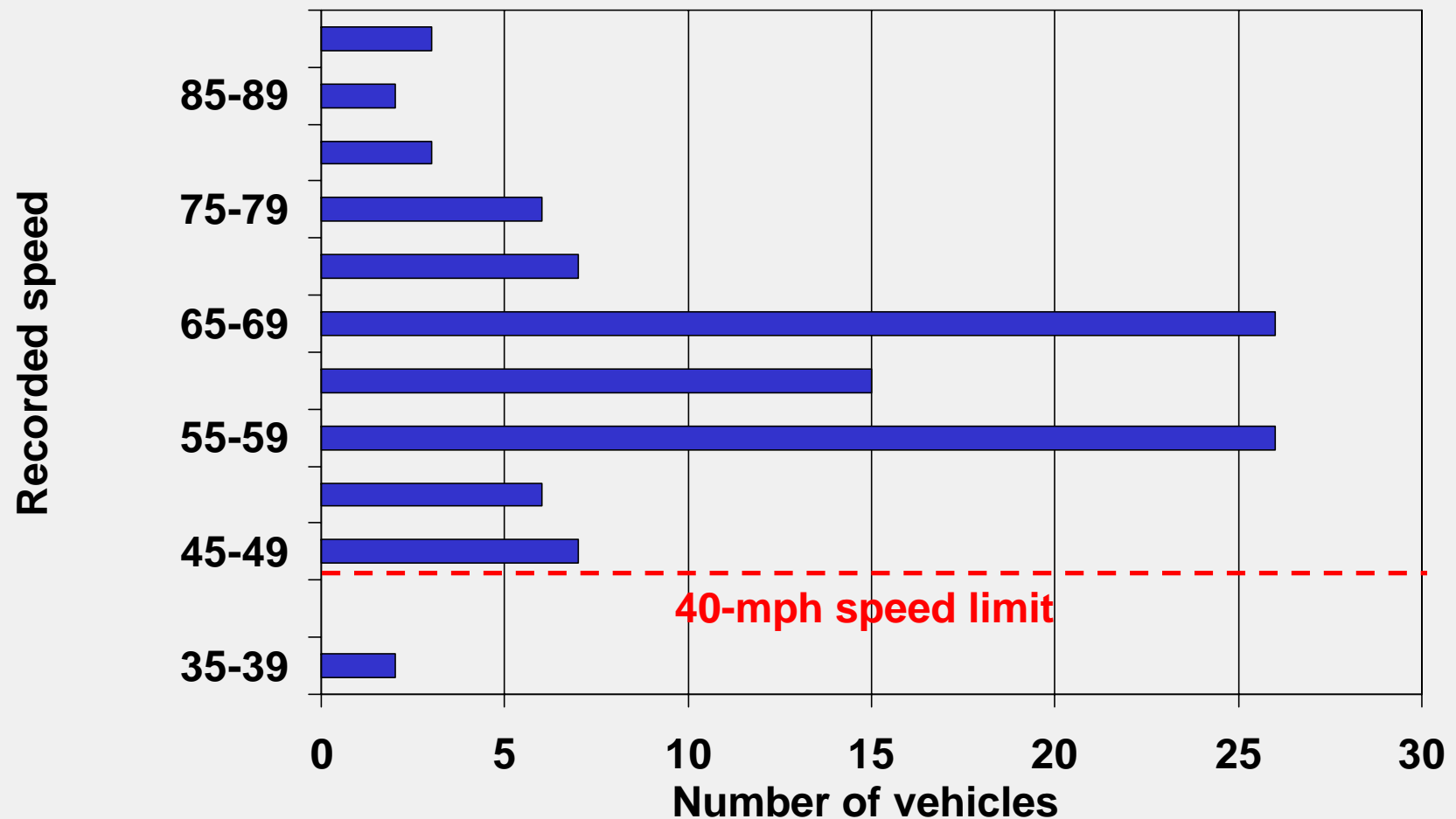
Highway Safety Issues

- Motorists do not comply with the 40-mph speed limit
- No median barrier at accident location

Speed Data for U.S. 1

- Calculated speed of Mercedes was 62 mph
- Roadway design speed of 45 mph
- Posted speed limit is 40 mph
- No records of a speed survey being conducted prior to the accident

NTSB Speed Study



Consequences of Speeding

- Nationwide, speeding contributed to 30 percent of all fatal accidents reported in 2004
- Increases the severity of crash forces
- Reduces the ability to steer around curves and obstacles
- Increases vehicle stopping distance
- Reduces a driver's ability to react to dangerous situations

Linden P.D. Speed Enforcement

- Officials were aware of problem
- Police department lacked the resources to address the problem

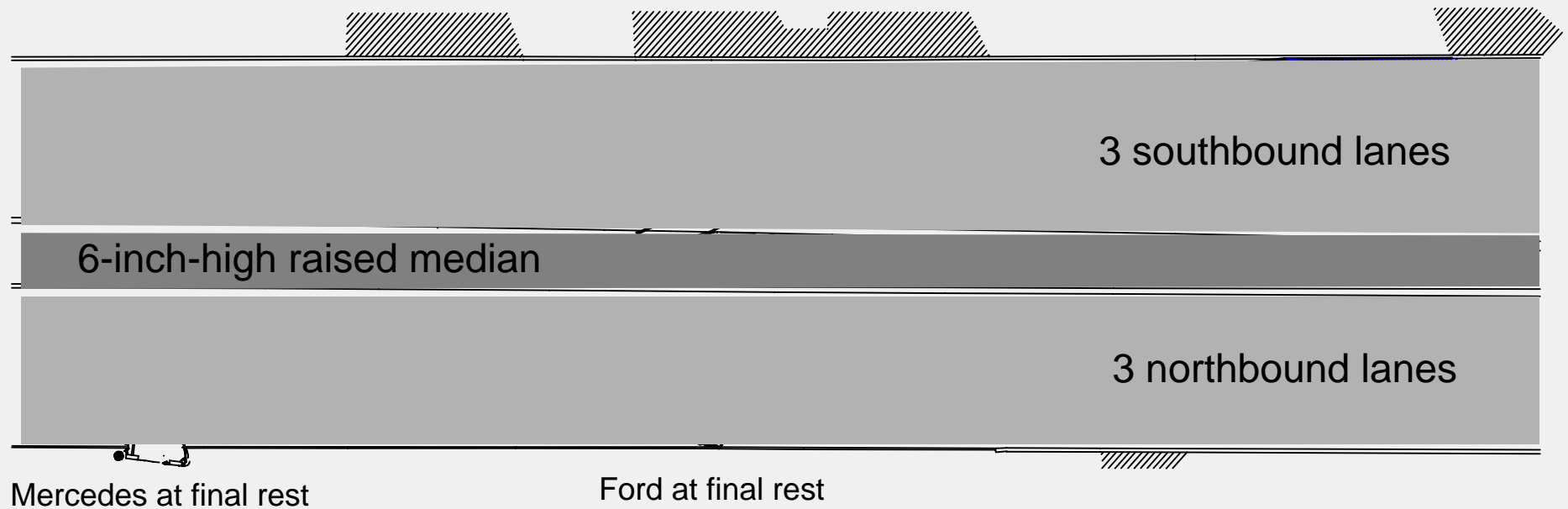


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Accident Location



U.S. 1 near milepost 41.4

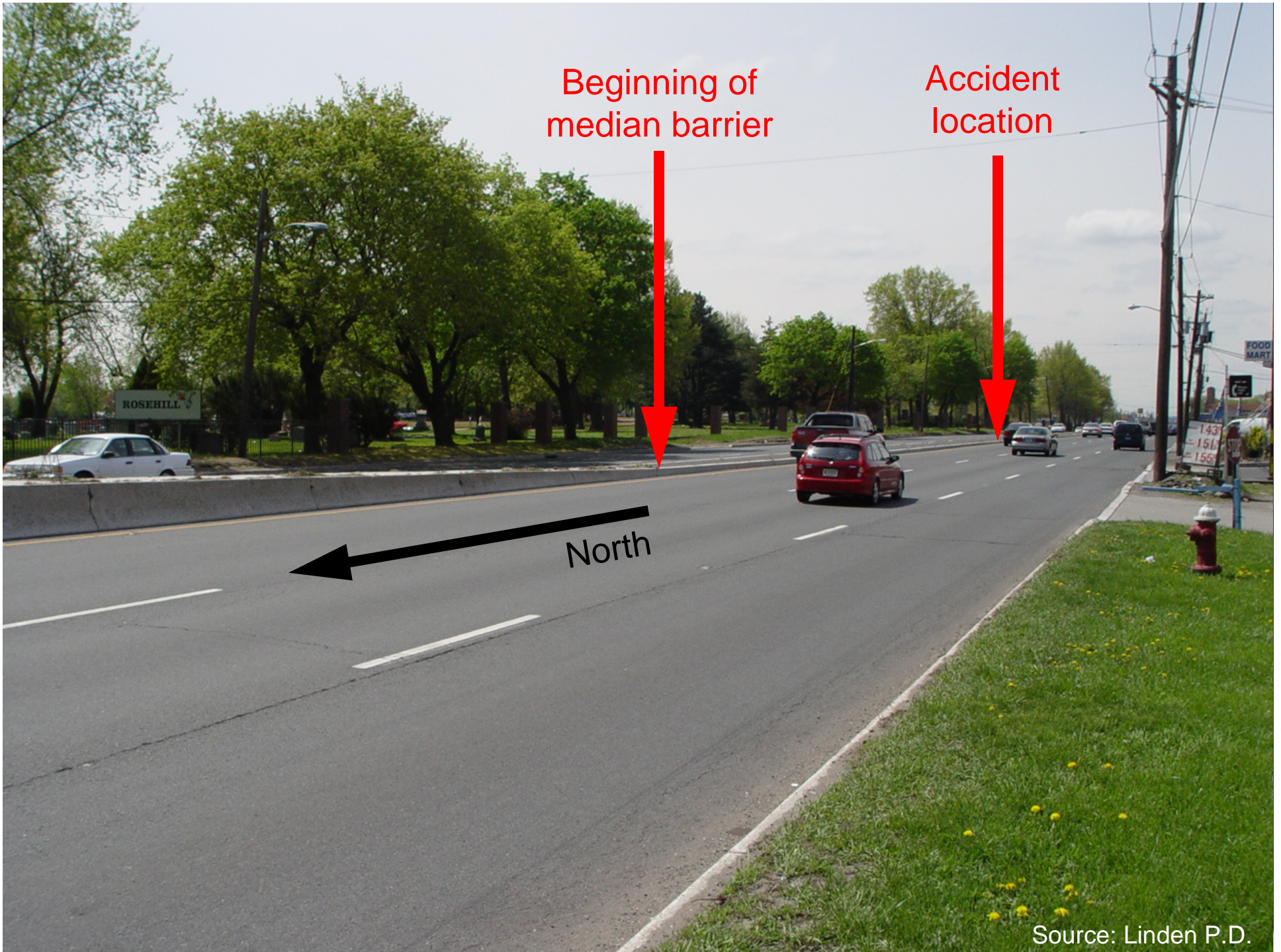


Beginning of
median barrier

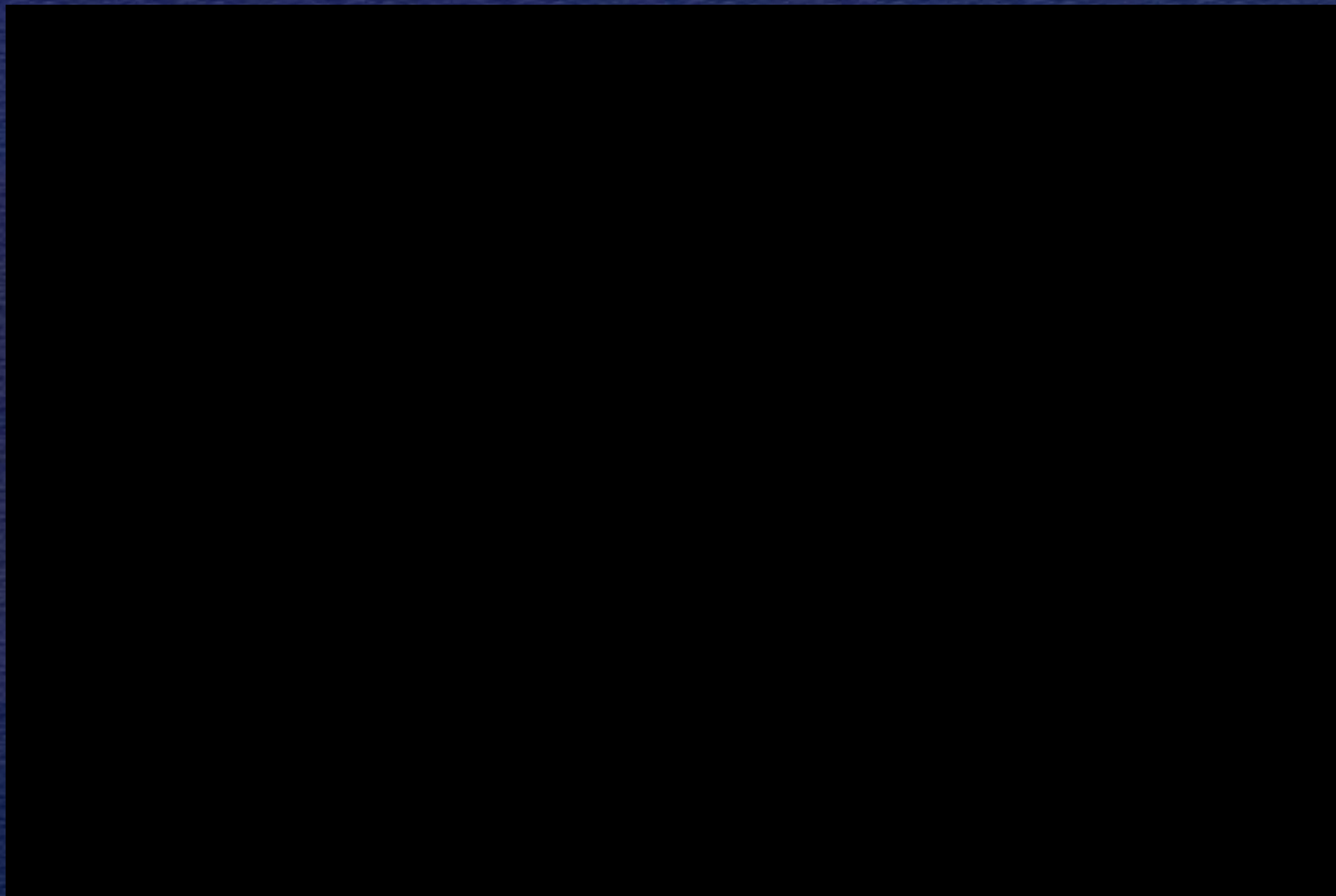
Accident
location

North

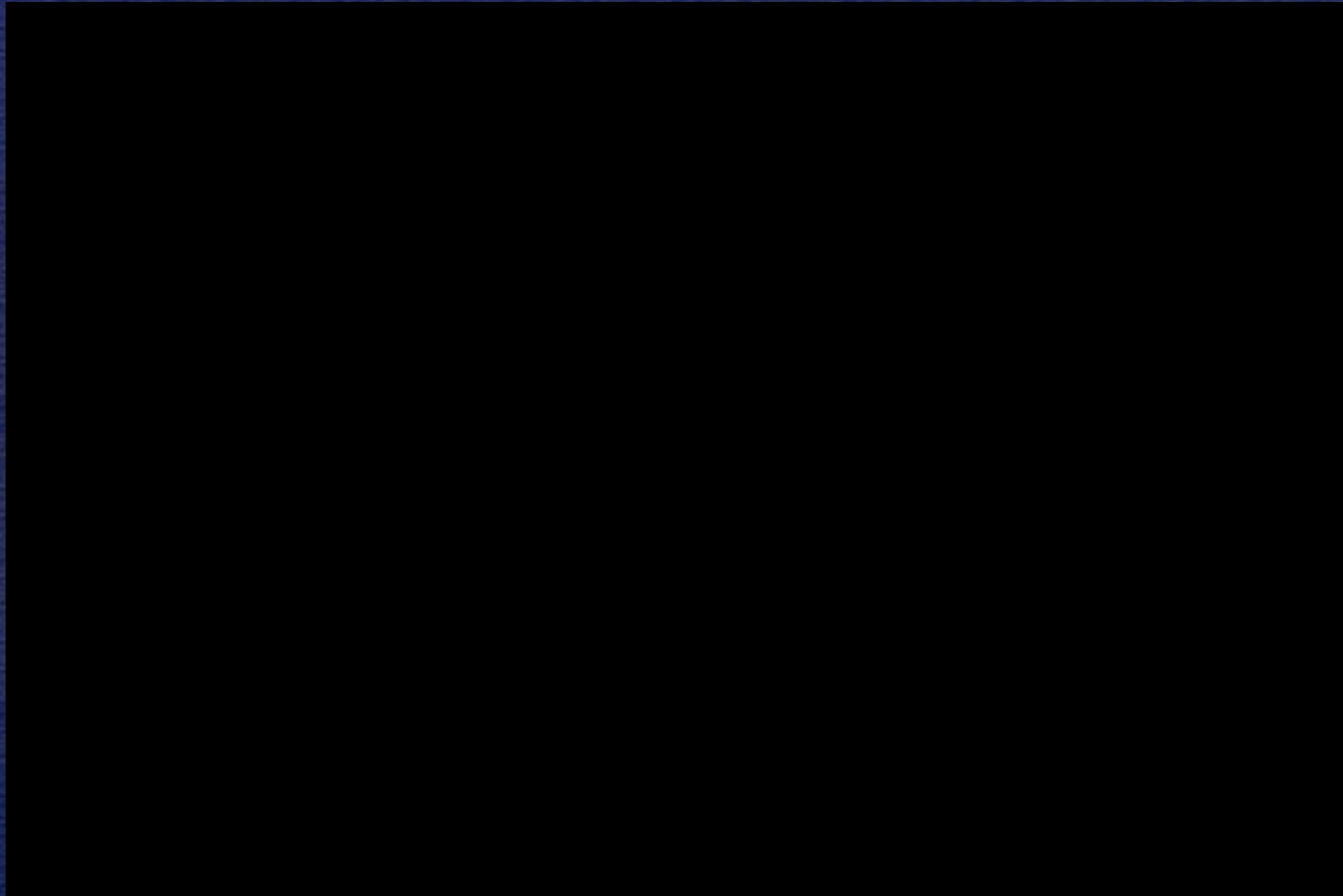
Source: Linden P.D.



Southbound Approach on U.S. 1



Northbound Approach on U.S. 1





Source: Microsoft

Postaccident Evaluation

- New Jersey DOT evaluated the accident site for a median barrier
- Determined a barrier was not needed
- Nothing to prevent another catastrophic crash

AASHTO Roadside Design Guide

- AASHTO establishes guidance for roadway design
- Barriers should only be used if the consequence of striking the barrier are less severe than if no barrier existed
- Severity of the accident would have been reduced had a barrier been installed in place of a raised median

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Source: Linden Police Department

Median Barrier Evaluation

- High-speed, controlled-access roadways
- High-volume, non-controlled-access roadways
- Multilane expressways
- Highways with partial control of access
- Lack of evaluative criteria



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